

wherein said pixel electrode has a thickness of 50.5 nm to 88.4 nm, and said thickness is satisfied with  $\lambda/4$ .

### REMARKS

At the outset, the Examiner is thanked for the review and consideration of the present application and for indicating the allowance of claims 10 and 11.

The Examiner's Office Action dated June 15, 2001, has been received and its contents reviewed. By this Amendment claims 1, 3, 5, and 8 have been amended. Accordingly, claims 1-11 and 14-24 are pending in the present application, of which claims 1, 3, 5, 8, 10, 14, 17, and 22-24 are independent.

Referring now to the detailed Office Action, the drawings are objected to under 37 CFR 183(a) as allegedly not showing the reflection area of the reflection layer being greater than the electrode area of the pixel. Applicants respectfully submit that, as illustrated in Fig. 1, for example, it is clear that the area of the reflection layer (i.e., 114 and 115 multi-layer film) is larger than that of the pixel electrode (113). This is evident as there is a gap between the pixel electrodes which exposes the reflection layer. Accordingly, Applicants respectfully request reconsideration and withdrawal of this objection to the drawings. ) ? not right

Claims 5-7, and 14-23 are rejected under 35 U.S.C. § 102(b) as allegedly anticipated by Masaya et al. (JP 07-230101); claims 1-4, and 8-9 are rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Masaya et al., in view of Iwaki et al. (U.S. Patent No. 5,168,383); and, claim 24 is rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Nakajima et al. (U.S. Patent No. 6,108,056). These rejections are respectfully traversed at least for the reasons provided below.

Applicants respectfully note that the Office Action Summary erroneously states that claims 10-11 are rejected, as claims 10-11 have been indicated as allowed in the detail Office Actions of October 25, 2000 and June 15, 2001.

As amended, claims independent claims 1, 3, 5, and 8 have been amended to further clarify that the thickness of the pixel electrode is satisfied with  $\lambda/4$ . Support for this amendment can be found at least in, e.g., the last paragraph bridging page 11 and page 12 of the

specification. As disclosed in the specification, the film thickness of the dielectric multi-layer films needs to be adjusted when used as the reflection layer so that the dielectric multi-layer film becomes  $\lambda/4$  film at the center wavelength of a required reflection wavelength range. The  $\lambda/4$  film in this specification refers to a film that satisfies the relation of  $nd = \lambda/4$ , where  $n$  is a refractive index,  $d$  is a film thickness, and  $\lambda$  is a center wavelength. Applicants respectfully submit that Masaya et al., as well as the remaining cited prior art references, fails to disclose this claimed feature.

With respect to claims 14, 22, and 24, Applicants respectfully submit that the claimed feature wherein a reflection area of the reflection layer is greater than an electrode area of the pixel electrode is not disclosed by Masaya et al. or any other cited prior art references.

Moreover, Applicants respectfully submit that Masaya et al., as well as other cited prior art references, fails to teach a dielectric multi-layer film and a reflection layer comprising a metal material, such as cited in independent claims 17 and 23, for example.

The Court of Appeals for the Federal Circuit has consistently held that "Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim." Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick, 221 USPQ 481, 485 (Fed. Cir. 1984). Masaya et al. clearly fails to disclose structure positively recited and claimed in applicants independent claims 1, 3, 5, 8, 14, 17, 22. More specifically, Masaya et al. fails to disclose the features of the thickness of the pixel electrode is satisfied with  $\lambda/4$ , a reflection area of the reflection layer is greater than an electrode area of the pixel electrode, a dielectric multi-layer film, and a reflection layer comprising a metal material. Accordingly, the § 102(b) rejection of claims 5-7, and 14-23 is respectfully requested to be reconsidered and withdrawn.

With respect to the § 103(a) rejection of claims 1-4, and 8-9, as discussed above, Masaya et al. and Iwaki et al. do not teach, disclose, or suggest the thickness of the pixel electrode that is satisfied with  $\lambda/4$ . As both Masaya et al. and Iwaki et al. are deficient, the combination of the references is improper.

With respect to § 103(a) rejection of claim 24, as discussed above and in addition to the deficiency admitted by the Office, Nakajima et al. also fails to teach, disclose, or suggest a

dielectric multi-layer film, as well as a reflection layer comprising a metal material. Should the Office still maintain this rejection, Applicants would respectfully request the Office to cite the specific text of Nakajima et al. disclosing a dielectric multi-layer film and a reflection layer comprising a metal material.

It is well-established that, in order to show obviousness, all limitations in the claim must be taught or suggested by the prior art. In Re Boyka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974); MPEP § 2143.03. It is error to ignore specific limitations distinguishing over the references. In Re Boe, 184 U.S.P.Q. 38, 505 F.2d 1297 (C.C.P.A. 1974); In Re Saether, 181 U.S.P.Q. 36, 492 F.2d 849 (C.C.P.A. 1974); In Re Glass, 176 U.S.P.Q. 489, 472 F.2d 1388 (C.C.P.A. 1973).

Citing references which merely indicate that isolated elements and/or features recited in the claims are known is not a sufficient basis for concluding that the combination of claimed elements would have been obvious. Ex parte Hiyamizu 10 USPQ2d 1393 (BPAI 1988).

Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination. In re Geiger 815 F2d 686 (Fed. Cir. 1987), 2 USPQ2d 1276; In re Fine 837 F2d 1071, 5 PQ2d 1596 (Fed. Cir. 1988).

In view of the foregoing amendments and arguments, Applicants respectfully submit that *prima facie* case of obviousness has not been established. Accordingly, Applicants respectfully request reconsideration and withdrawal of the U.S.C. § 103(a) rejections of claims 1-4, 8-9, and 24.

### **CONCLUSION**

Having responded to all rejections set forth in the outstanding Final Office Action, it is submitted that claims 1-9 and 14-24 are now in condition for allowance. An early and favorable Notice of Allowance is respectfully solicited. In the event that the Examiner is of the opinion

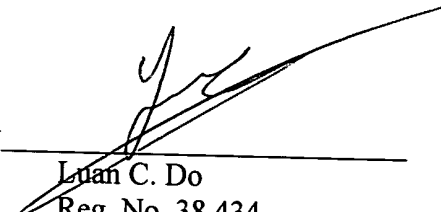
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that a brief telephone or personal interview will facilitate allowance of one or more of the above claims, the Examiner is courteously requested to contact Applicants' undersigned representative.

Respectfully submitted,

By



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VERSION OF AMENDED CLAIMS WITH  
MARKINGS TO SHOW CHANGES MADE

1. (Twice amended) A liquid crystal display device comprising:
  - a switching element formed on a substrate;
  - a pixel electrode formed of a transparent conductive film, said electrode being connected to said switching element; and
  - a reflection layer formed of a dielectric multi-layer film, which is arranged in contact with said pixel electrode,wherein said pixel electrode has a thickness of 50.5 nm to 88.4 nm, and said thickness is satisfied with  $\lambda/4$ .
  
3. (Twice amended) A liquid crystal display device comprising a switching element formed on a substrate, a pixel electrode connected to said switching element, and a reflection layer,
  - wherein said pixel electrode is formed of a transparent conductive film, and
  - wherein said reflection layer formed of a dielectric multi-layer film is provided under said pixel electrode, and
  - wherein said pixel electrode has a thickness of 50.5 nm to 88.4 nm, and said thickness is satisfied with  $\lambda/4$ .
  
5. (Twice amended) A liquid crystal display device comprising a switching element formed on a substrate, a pixel electrode connected to said switching element, and a reflection layer,
  - wherein said switching element is connected to a capacitance,
  - wherein said capacitance comprising a common electrode formed of a transparent conductive film, a dielectric film formed on said common electrode, and said pixel electrode formed of a transparent conductive film formed on said dielectric film, [and]
  - wherein said reflection layer formed of a dielectric multi-layer film is provided below said common electrode, and

wherein said pixel electrode has a thickness of 50.5 nm to 88.4 nm, and said thickness is satisfied with  $\lambda/4$ .

8. (Twice amended) A method of manufacturing a liquid crystal display device, comprising the steps of:

forming a switching element formed on a substrate;

a reflection layer formed of a dielectric multi-layer film above said switching element; and,

forming a pixel electrode formed of a transparent conductive film on said reflection layer,

wherein said pixel electrode has a thickness of 50.5 nm to 88.4 nm, and said thickness is satisfied with  $\lambda/4$ .